



FEMA

January 14, 2009

The Honorable Robert A. Cashell, Sr.
Mayor of the City of Reno
P.O. Box 1900
Reno, NV 89505

Dear Mayor Cashell:

This letter is in response to your December 24, 2008, letter to the Department of Homeland Security's, Federal Emergency Management Agency (FEMA) regarding the upcoming March 16, 2009, effective date for the Washoe County Flood Insurance Rate Map (FIRM). You requested an extension to the effective date for panel numbers 32031C3261G and 32031C3245G on which a levee deaccreditation along Whites Creek is reflected on the new FIRM.

FEMA and the City of Reno have been working cooperatively on the new mapping for the past two years. Our initial meeting among Washoe County communities and FEMA was held in January 2007, and we appreciate the cooperation and professionalism of City staff during this time period. In addition, a letter from FEMA (copy enclosed) regarding the deaccreditation of this levee along Whites Creek was sent to your attention on September 21, 2007.

Providing communities with up-to-date and reliable flood hazard information on FIRMs is one of the primary goals of FEMA's Map Modernization Initiative. As such, we can not grant an additional extension to the final map determination that was issued on September 16, 2008; as the best available data indicates the area in question should be identified in a special flood hazard area (SFHA). Therefore, the new FIRM panels for Washoe County are becoming effective on March 16, 2009.

We recognize that the City has been working to address issues associated with the Whites Creek levee. It is our understanding that the City is planning to obtain funding to analyze the levee and make any necessary improvements that could enable this levee to be accredited by FEMA. A Letter of Map Revision request can be submitted to FEMA when the levee is certified by a licensed professional engineer as meeting the criteria specified in the Code of Federal Regulations, Title 44, Section 65.10 (copy enclosed).


To reduce the first year's financial impact of purchasing flood insurance in a new SFHA, residents should be encouraged to purchase a preferred risk flood insurance policy prior to the March 16, 2009, effective date of the new FIRM. This lower cost preferred risk flood insurance policy would be in effect for one year at a cost not to exceed \$400.

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FEMA Region IX planning and insurance staff continue to be available to work with City officials to provide technical assistance in providing public outreach to address the flood map change, and encourage the impacted residents to take advantage of the lowest cost flood insurance rates available to them. FEMA is also willing to work with your City to perform additional studies that identify flood elevations in Zone A areas, such as the area behind the deaccredited Whites Creek levee on the new FIRM becoming effective March 16, 2009.

If you have questions or need additional information regarding the flood mapping for your community, please contact Eric Simmons, Senior Engineer, at 510-627-7029, or by e-mail at eric.simmons@dhs.gov.

Sincerely,


Sally Ziolkowski, Director
Mitigation Division

Enclosures

cc: Ms. Kerri Lanza, City of Reno Senior Engineer
Ms. Kim Groenewold, Nevada Division of Water Resources, NFIP State Coordinator
Senator Reid State Office
Senator Ensign State Office
Representative Heller District Office



FEMA

September 21, 2007

CERTIFIED MAIL

The Honorable Robert Cashell, Mayor
City of Reno
Reno City Hall
1 East First Street
P.O. Box 1900
Reno, NV 89505

Dear Mayor Cashell:

This letter is regarding the levees listed below, that are also identified on the enclosed Levee Status table.

- Levee with ID # P0, along Whitewater River and Spring Brook Wash
- Levees with ID #s P6 and P9, along West Cathedral Channel
- Levee with ID # P11, along Whites Creek Channel

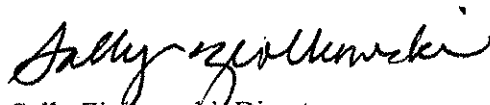
The flood hazard information presented on the effective Flood Insurance Rate Map (FIRM) and in the effective Flood Insurance Study (FIS) report for the City of Reno, Nevada is based, in some areas, on flood protection provided by these levees. Based on the information available and on the mapping standards of the National Flood Insurance Program (NFIP) at the time that the FIS was performed, FEMA accredited the levees with providing protection from the flood that has a 1-percent-chance of being equaled or exceeded in any given year. This 1-percent-annual-chance flood is referred to as the base flood.

The Department of Homeland Security's, Federal Emergency Management Agency (FEMA) is currently in the process of producing a countywide FIS report and Digital Flood Insurance Rate Map (DFIRM) for Washoe County, Nevada. Providing communities with up-to-date, accurate, and reliable flood hazard information on DFIRMs is one of the primary goals of FEMA's Map Modernization program. As part of this process, FEMA sent you a letter dated May 14, 2007, to provide you the opportunity to receive a Provisionally Accredited Levee (PAL) designation for these levees. For levees with ID #s P0, P6 and P9, FEMA did not receive a response. For the levee with ID # P11, FEMA did not receive a signed PAL agreement. As a result, these levees will not be recognized as provisionally accredited, and will be deaccredited on the new countywide DFIRM.

In accordance with the Code of Federal Regulations, Title 44, Section 65.10, (44 CFR 65.10), FEMA will show the area landward of the levees as located in a Special Flood Hazard Area (Zone A), the area subject to inundation by the base flood. Mandatory flood insurance purchase requirements of the NFIP will apply in this area when the new countywide DFIRM becomes effective, tentatively scheduled for the winter of 2008.

Information can be submitted to FEMA through the Letter of Map Revision (LOMR) process for any levee that can be documented as meeting the requirements of 44 CFR 65.10. FEMA will continue to work closely with community officials and levee owners to make residents aware of the current flood hazards they face, the availability of flood insurance, and other methods to mitigate and lower flood risk. If you have questions or need additional information regarding flood mapping, please contact Eric Simmons Map Modernization Regional Engineer, by telephone at (510) 627-7029.

Sincerely,



Sally Ziolkowski, Director
Mitigation Division

Enclosures:

- Requirements of 44 CFR Section 65.10: Mapping of Areas Protected by Levee Systems
- Levee Status table
- September 17, 2007 letter from Mr. Eric Simmons to Mr. David Westhoff

cc: David Westhoff, P.E., Quad Knopf, Senior Hydrologist
Heidi Frantz, Quad Knopf, Water Resources Specialist
Charles McNeely, City of Reno, City Manager
Kerri Williams-Lanza, City of Reno, Floodplain Administrator
Mary Thorsen, Interim Nevada NFIP Coordinator
Judy Soutiere, USACE, Sacramento District
Senator Ensign State Office
Senator Reid State Office
Representative Heller District Office

occurred in the flood plain since the existing floodway was developed. If the original hydraulic computer model is not available, an alternate hydraulic computer model may be used provided the alternate model has been calibrated so as to reproduce the original water surface profile of the original hydraulic computer model. The alternate model must be then modified to include all encroachments that have occurred since the existing floodway was developed.

(ii) The floodway analysis must be performed with the modified computer model using the desired floodway limits.

(iii) The floodway limits must be set so that combined effects of the past encroachments and the new floodway limits do not increase the effective base flood elevations by more than the amount specified in § 60.3(d)(2). Copies of the input and output data from the original and modified computer models must be submitted.

(3) Delineation of the revised floodway on a copy of the effective NFIP map and a suitable topographic map.

(d) *Certification requirements.* All analyses submitted shall be certified by a registered professional engineer. All topographic data shall be certified by a registered professional engineer or licensed land surveyor. Certifications are subject to the definition given at § 65.2 of this subchapter.

(e) *Submission procedures.* All requests that involve changes to floodways shall be submitted to the appropriate FEMA Regional Office servicing the community's geographic area.

[51 FR 30315, Aug. 25, 1986]

§ 65.8 Review of proposed projects.

A community, or an individual through the community, may request FEMA's comments on whether a proposed project, if built as proposed, would justify a map revision. FEMA's comments will be issued in the form of a letter, termed a Conditional Letter of Map Revision, in accordance with 44 CFR part 72. The data required to support such requests are the same as those required for final revisions under §§ 65.5, 65.6, and 65.7, except as-built certification is not required. All such re-

quests shall be submitted to the FEMA Headquarters Office in Washington, DC, and shall be accompanied by the appropriate payment, in accordance with 44 CFR part 72.

[62 FR 5736, Feb. 6, 1997]

§ 65.9 Review and response by the Administrator.

If any questions or problems arise during review, FEMA will consult the Chief Executive Officer of the community (CEO), the community official designated by the CEO, and/or the requester for resolution. Upon receipt of a revision request, the Administrator shall mail an acknowledgment of receipt of such request to the CEO. Within 90 days of receiving the request with all necessary information, the Administrator shall notify the CEO of one or more of the following:

(a) The effective map(s) shall not be modified;

(b) The base flood elevations on the effective FIRM shall be modified and new base flood elevations shall be established under the provisions of part 67 of this subchapter;

(c) The changes requested are approved and the map(s) amended by Letter of Map Revision (LOMR);

(d) The changes requested are approved and a revised map(s) will be printed and distributed;

(e) The changes requested are not of such a significant nature as to warrant a reissuance or revision of the flood insurance study or maps and will be deferred until such time as a significant change occurs;

(f) An additional 90 days is required to evaluate the scientific or technical data submitted; or

(g) Additional data are required to support the revision request.

(h) The required payment has not been submitted in accordance with 44 CFR part 72, no review will be conducted and no determination will be issued until payment is received.

[51 FR 30315, Aug. 25, 1986; 61 FR 46331, Aug. 30, 1996, as amended at 62 FR 5736, Feb. 6, 1997]

§ 65.10 Mapping of areas protected by levee systems.

(a) *General.* For purposes of the NFIP, FEMA will only recognize in its flood

hazard and risk mapping effort those levee systems that meet, and continue to meet, minimum design, operation, and maintenance standards that are consistent with the level of protection sought through the comprehensive flood plain management criteria established by § 60.3 of this subchapter. Accordingly, this section describes the types of information FEMA needs to recognize, on NFIP maps, that a levee system provides protection from the base flood. This information must be supplied to FEMA by the community or other party seeking recognition of such a levee system at the time a flood risk study or restudy is conducted, when a map revision under the provisions of part 65 of this subchapter is sought based on a levee system, and upon request by the Administrator during the review of previously recognized structures. The FEMA review will be for the sole purpose of establishing appropriate risk zone determinations for NFIP maps and shall not constitute a determination by FEMA as to how a structure or system will perform in a flood event.

(b) *Design criteria.* For levees to be recognized by FEMA, evidence that adequate design and operation and maintenance systems are in place to provide reasonable assurance that protection from the base flood exists must be provided. The following requirements must be met:

(1) *Freeboard.* (i) Riverine levees must provide a minimum freeboard of three feet above the water-surface level of the base flood. An additional one foot above the minimum is required within 100 feet in either side of structures (such as bridges) riverward of the levee or wherever the flow is constricted. An additional one-half foot above the minimum at the upstream end of the levee, tapering to not less than the minimum at the downstream end of the levee, is also required.

(ii) Occasionally, exceptions to the minimum riverine freeboard requirement described in paragraph (b)(1)(i) of this section, may be approved. Appropriate engineering analyses demonstrating adequate protection with a lesser freeboard must be submitted to support a request for such an exception. The material presented must

evaluate the uncertainty in the estimated base flood elevation profile and include, but not necessarily be limited to an assessment of statistical confidence limits of the 100-year discharge; changes in stage-discharge relationships; and the sources, potential, and magnitude of debris, sediment, and ice accumulation. It must be also shown that the levee will remain structurally stable during the base flood when such additional loading considerations are imposed. Under no circumstances will freeboard of less than two feet be accepted.

(iii) For coastal levees, the freeboard must be established at one foot above the height of the one percent wave or the maximum wave runup (whichever is greater) associated with the 100-year stillwater surge elevation at the site.

(iv) Occasionally, exceptions to the minimum coastal levee freeboard requirement described in paragraph (b)(1)(iii) of this section, may be approved. Appropriate engineering analyses demonstrating adequate protection with a lesser freeboard must be submitted to support a request for such an exception. The material presented must evaluate the uncertainty in the estimated base flood loading conditions. Particular emphasis must be placed on the effects of wave attack and overtopping on the stability of the levee. Under no circumstances, however, will a freeboard of less than two feet above the 100-year stillwater surge elevation be accepted.

(2) *Closures.* All openings must be provided with closure devices that are structural parts of the system during operation and design according to sound engineering practice.

(3) *Embankment protection.* Engineering analyses must be submitted that demonstrate that no appreciable erosion of the levee embankment can be expected during the base flood, as a result of either currents or waves, and that anticipated erosion will not result in failure of the levee embankment or foundation directly or indirectly through reduction of the seepage path and subsequent instability. The factors to be addressed in such analyses include, but are not limited to: Expected flow velocities (especially in constricted areas); expected wind and wave

action; ice loading; impact of debris; slope protection techniques; duration of flooding at various stages and velocities; embankment and foundation materials; levee alignment, bends, and transitions; and levee side slopes.

(4) *Embankment and foundation stability.* Engineering analyses that evaluate levee embankment stability must be submitted. The analyses provided shall evaluate expected seepage during loading conditions associated with the base flood and shall demonstrate that seepage into or through the levee foundation and embankment will not jeopardize embankment or foundation stability. An alternative analysis demonstrating that the levee is designed and constructed for stability against loading conditions for Case IV as defined in the U.S. Army Corps of Engineers (COE) manual, "Design and Construction of Levees" (EM 1110-2-1913, Chapter 6, Section II), may be used. The factors that shall be addressed in the analyses include: Depth of flooding, duration of flooding, embankment geometry and length of seepage path at critical locations, embankment and foundation materials, embankment compaction, penetrations, other design factors affecting seepage (such as drainage layers), and other design factors affecting embankment and foundation stability (such as berms).

(5) *Settlement.* Engineering analyses must be submitted that assess the potential and magnitude of future losses of freeboard as a result of levee settlement and demonstrate that freeboard will be maintained within the minimum standards set forth in paragraph (b)(1) of this section. This analysis must address embankment loads, compressibility of embankment soils, compressibility of foundation soils, age of the levee system, and construction compaction methods. In addition, detailed settlement analysis using procedures such as those described in the COE manual, "Soil Mechanics Design—Settlement Analysis" (EM 1100-2-1904) must be submitted.

(6) *Interior drainage.* An analysis must be submitted that identifies the source(s) of such flooding, the extent of the flooded area, and, if the average depth is greater than one foot, the water-surface elevation(s) of the base

flood. This analysis must be based on the joint probability of interior and exterior flooding and the capacity of facilities (such as drainage lines and pumps) for evacuating interior floodwaters.

(7) *Other design criteria.* In unique situations, such as those where the levee system has relatively high vulnerability, FEMA may require that other design criteria and analyses be submitted to show that the levees provide adequate protection. In such situations, sound engineering practice will be the standard on which FEMA will base its determinations. FEMA will also provide the rationale for requiring this additional information.

(c) *Operation plans and criteria.* For a levee system to be recognized, the operational criteria must be as described below. All closure devices or mechanical systems for internal drainage, whether manual or automatic, must be operated in accordance with an officially adopted operation manual, a copy of which must be provided to FEMA by the operator when levee or drainage system recognition is being sought or when the manual for a previously recognized system is revised in any manner. All operations must be under the jurisdiction of a Federal or State agency, an agency created by Federal or State law, or an agency of a community participating in the NFIP.

(1) *Closures.* Operation plans for closures must include the following:

(i) Documentation of the flood warning system, under the jurisdiction of Federal, State, or community officials, that will be used to trigger emergency operation activities and demonstration that sufficient flood warning time exists for the completed operation of all closure structures, including necessary sealing, before floodwaters reach the base of the closure.

(ii) A formal plan of operation including specific actions and assignments of responsibility by individual name or title.

(iii) Provisions for periodic operation, at not less than one-year intervals, of the closure structure for testing and training purposes.

(2) *Interior drainage systems.* Interior drainage systems associated with levee systems usually include storage areas,

gravity outlets, pumping stations, or a combination thereof. These drainage systems will be recognized by FEMA on NFIP maps for flood protection purposes only if the following minimum criteria are included in the operation plan:

(i) Documentation of the flood warning system, under the jurisdiction of Federal, State, or community officials, that will be used to trigger emergency operation activities and demonstration that sufficient flood warning time exists to permit activation of mechanized portions of the drainage system.

(ii) A formal plan of operation including specific actions and assignments of responsibility by individual name or title.

(iii) Provision for manual backup for the activation of automatic systems.

(iv) Provisions for periodic inspection of interior drainage systems and periodic operation of any mechanized portions for testing and training purposes. No more than one year shall elapse between either the inspections or the operations.

(3) *Other operation plans and criteria.* Other operating plans and criteria may be required by FEMA to ensure that adequate protection is provided in specific situations. In such cases, sound emergency management practice will be the standard upon which FEMA determinations will be based.

(d) *Maintenance plans and criteria.* For levee systems to be recognized as providing protection from the base flood, the maintenance criteria must be as described herein. Levee systems must be maintained in accordance with an officially adopted maintenance plan, and a copy of this plan must be provided to FEMA by the owner of the levee system when recognition is being sought or when the plan for a previously recognized system is revised in any manner. All maintenance activities must be under the jurisdiction of a Federal or State agency, an agency created by Federal or State law, or an agency of a community participating in the NFIP that must assume ultimate responsibility for maintenance. This plan must document the formal procedure that ensures that the stability, height, and overall integrity of the levee and its associated structures

and systems are maintained. At a minimum, maintenance plans shall specify the maintenance activities to be performed, the frequency of their performance, and the person by name or title responsible for their performance.

(e) *Certification requirements.* Data submitted to support that a given levee system complies with the structural requirements set forth in paragraphs (b)(1) through (7) of this section must be certified by a registered professional engineer. Also, certified as-built plans of the levee must be submitted. Certifications are subject to the definition given at §65.2 of this subchapter. In lieu of these structural requirements, a Federal agency with responsibility for levee design may certify that the levee has been adequately designed and constructed to provide protection against the base flood.

[51 FR 30316, Aug. 25, 1986]

§65.11 Evaluation of sand dunes in mapping coastal flood hazard areas.

(a) *General conditions.* For purposes of the NFIP, FEMA will consider storm-induced dune erosion potential in its determination of coastal flood hazards and risk mapping efforts. The criterion to be used in the evaluation of dune erosion will apply to primary frontal dunes as defined in §59.1, but does not apply to artificially designed and constructed dunes that are not well-established with long-standing vegetative cover, such as the placement of sand materials in a dune-like formation.

(b) *Evaluation criterion.* Primary frontal dunes will not be considered as effective barriers to base flood storm surges and associated wave action where the cross-sectional area of the primary frontal dune, as measured perpendicular to the shoreline and above the 100-year stillwater flood elevation and seaward of the dune crest, is equal to, or less than, 540 square feet.

(c) *Exceptions.* Exceptions to the evaluation criterion may be granted where it can be demonstrated through authoritative historical documentation that the primary frontal dunes at a specific site withstood previous base flood storm surges and associated wave action.

[53 FR 16279, May 6, 1988]